

# HALOPHRYNE OCELLATUS, A NEW SPECIES OF FROGFISH (BATRACHOIDIDAE) FROM WESTERN AUSTRALIA

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## ABSTRACT

A new species of frogfish, *Halophryne ocellatus*, is described from Western Australia. It differs from the only other known species in the genus, *H. diemensis*, by a combination of characters which include an ocellated colour pattern, absence of skin ridges on the anterior part of the body and enlarged pores on the head.

## INTRODUCTION

Gill (1863) introduced the batrachoidid genus *Halophryne* to accommodate a single species, *H. diemensis*. This species is represented in the Western Australian Museum, Perth (abbreviated WAM in subsequent text) by numerous specimens from Western Australia. This paper describes a second species of *Halophryne*, *H. ocellatus*, which is easily recognised by its colour pattern.

The type series (holotype and 21 paratypes) of *H. ocellatus* is deposited at WAM. In addition, 36 specimens (44 — 218 mm standard length) of *H. diemensis* at WAM were examined. Measurements of the holotype and paratypes were made with a needle-point dial caliper to the nearest millimetre. Where the last 2 rays of the soft dorsal and anal fins are joined at their bases, they are counted as a single ray. The lateral line count is the number of tentacles in a continuous longitudinal line from the large open pore above the base of the uppermost opercular spine to below the last dorsal ray. The peculiar morphology of batrachoidid fishes necessitates the following definitions:

Head length — from the anteriormost point of the upper jaw to a point on the nape in line with both upper ends of the gill openings;

Body depth — vertical distance from the origin of the soft dorsal fin to the abdomen;

Snout length — from the anteriormost point of the upper jaw to the mid-point of a line joining the front borders of the eyes;

Eye diameter — horizontal diameter of bony orbit;

Interorbital width — least width of bony interorbital.

*Halophryne ocellatus* sp. nov.

Figs 1, 2a and 3a; Table 1

## Holotype

WAM P5956, 190 mm standard length (SL), female, collected in the Easter Group, Houtman Abrolhos, Western Australia, at 80 metres in craypot, P. McMillan, 16 May 1963.

Table 1. Measurements in mm and fin ray counts of selected type specimens of *H. ocellatus*.

	P5956	P24829	P6164	P14833	P13767	P14702	P6287	P7148	P24830
Total length	226	283	215	155	121	107	84	59	30
Standard length	190	213	173	124	98	79	65	47	23
Head length	65	76	55	43	34	30	24	17	9
Snout length	13	15	11	8	5	5	4	2	1
Eye diameter	17	18	16	13	10	9	8	5	3
Interorbital width	9	12	10	7	4	4	3	2	1
Body depth	60	70	59	32	28	18	19	13	7
Soft dorsal base	99	115	96	66	52	39	32	24	12
Anal base	75	91	70	49	41	35	29	22	11
Pectoral length	45	52	43	29	24	18	18	13	7
Ventral length	47	50	38	30	24	24	19	12	8
First dorsal spine length	15	18	12	8	7	*	5	*	*
Soft dorsal fin	21	20	21	20	20	20	20	*	20
Anal fin	17	18	18	17	17	17	17	*	*
Pectoral fin	22	22	22	22	*	*	22	*	*
Sex	Female	Male	Female	Female	Female	Female	Male	Juv.	Juv.

\* Some measurements and counts were not taken due to damage, distortion or extremely small size.

## Paratypes

WAM P3364, 138 mm SL, Pelsart Island, Houtman Abrolhos, V. Serventy, 1950; P5851, two specimens 109 — 127 mm SL, trawled in Shark Bay, W. & W. Poole, July 1963; P5955, 102 mm SL, Shark Bay, R.J. McKay, 1960; P6149, 136 mm SL, Dirk Hartog Island, at 60 metres in craypot, LFB *Saturn*, 6 March 1957; P6260, 130 mm SL, Shark Bay, R.J. McKay, 1960; P7148, 47 mm SL, Dampier Archipelago, R.D. Royce, 27 May 1960; P9393-4, 43-45 mm SL, Exmouth Gulf, R.J. McKay, no other data; P12073, 38 mm SL, Exmouth Gulf, R.J. McKay, 1960; P13767-9, 75-98 mm SL, Shark Bay, R.J. McKay, 1962; P14653, 101 mm SL, Shark Bay, R.J. McKay, 2 June 1962; P14833, 124 mm SL, trawled in Shark Bay, A. McKenzie, August 1965; P16296, 102 mm SL, trawled in Exmouth Gulf, D. Bathgate, 1967-68; P16483, 88 mm SL, Fisheries Dept. Broome, 1961; P23604, 99 mm SL, dredged off Carnarvon in 26 metres, D. Heald, 19 July 1972; P24562, 101 mm SL, prawn trawl off Onslow, G. Lang, November 1973; P24829, 231 mm SL, Kalbarri (Murchison River), R. Lilly, 5 June 1970; P24830, 23 mm SL, trawled off Carnarvon, W. & W. Poole on *Bluefin*, 1967.

## Diagnosis

A species of *Halophryne* characterised by its ocellated colour pattern,

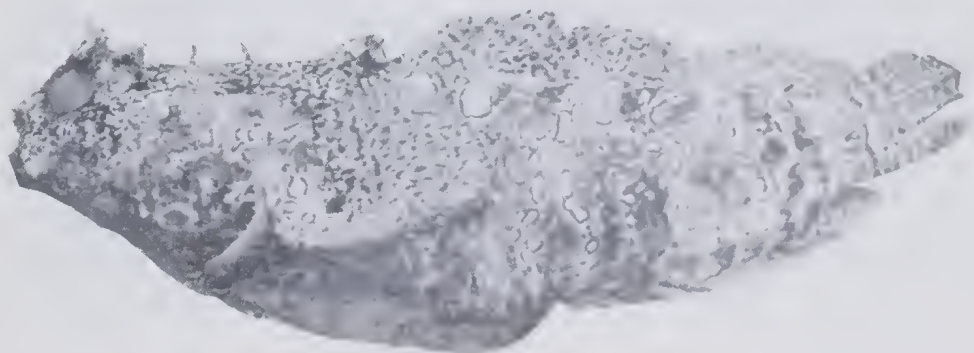


Fig. 1. *Halophryne ocellatus*, holotype, P5956, female, 190 mm SL.



Fig. 2. Skulls (dorsal view) of *Halophryne*: a, *H. ocellatus*, 152 mm SL; b, *H. diemensis*, 136 mm SL.

absence of skin ridges on the anterior part of the body and enlarged pores on the head.

### Description

Measurements and counts of the holotype and selected paratypes are presented in Table 1. The counts and proportions given below are those of the holotype, with the range for the paratypes appearing in parentheses.

Dorsal rays III, 21 (III, 20-21); anal rays 17 (17-18); pectoral rays 22 (22-23); caudal rays 14 (14-15); pores in lateral line 28 (26-29).

Head 2.9 (2.6-3.1) in SL; eye 3.8 (3.0-4.2), snout 5.0 (4.9-9.0). interorbital 7.2 (5.5-10.0), pectoral 1.4 (1.3-1.5), all in head; interorbital 1.9 (1.5-3.0) in eye.

Body cylindrical, head depressed, tail compressed; snout short, rather blunt; eyes prominent, elevated; interorbital space concave; jaws equal, gape horizontal, maxilla reaching almost below centre of eye; operculum and suboperculum each with 2 prominent spines joined at their bases, the lower spine 1/2 length of upper; opercular spines about 1/3 longer than those on suboperculum, the uppermost equal to eye; gill opening a vertical slit on upper 2/3 of pectoral base (about 1/2 pectoral base in small specimens).

Skin smooth and scaleless, loosely attached to body and fins; 3 fringed tentacles above each eye (largest equal to vertical diameter of eye); similar but smaller tentacles arranged around mouth, along pre-opercular border and adjacent to opercular and subopercular spines; 3 series of bifid tentacles on sides, 4 series along occiput and a series below eye (each bifid tentacle surrounds a small sensory pore); anterior nostril tubular, projecting forward from a bulbous clump of tentacles on either side of snout tip; posterior nostril near inner front border of eye, without an elongated rim; large open pores on head joined by large underlying canals, several above upper lip, a row along lower surface of mandible and continued along border of pre-operculum, 1 anterior to each posterior nostril and 3 in a longitudinal line behind each eye.

Jaws, palate and pharyngeals with bands of sharp, cardiform teeth (villiform in small specimens); premaxilla with 2-3 series of small teeth, widening near symphysis to form 3-4 series; teeth on vomer and palatines larger and in 4-5 series, an elliptical-shaped band on each bone; mandibular teeth similar in size to those on palate, in 2-3 series expanding near symphysis forming 2 round patches; teeth on lower pharyngeals canine-like, larger than those on palate; those on upper pharyngeals separated into anterior and posterior bands, the anterior teeth small, almost villiform and posterior teeth larger, especially near symphysis; 3-5 knob-like gill rakers on lower limb of first gill arch terminating in small patches of slender, recurved teeth.

A mid-dorsal, longitudinal groove sometimes present on nape; origin of dorsal fin just behind head; spinous dorsal covered by thick skin, first spine equal to snout, second slightly longer, third spine shortest, joined to soft dorsal by a low fold of skin; rays of soft dorsal, except last 2-3, about equal in length, first ray equal to snout plus eye; rays of anal, except first 2-3 and

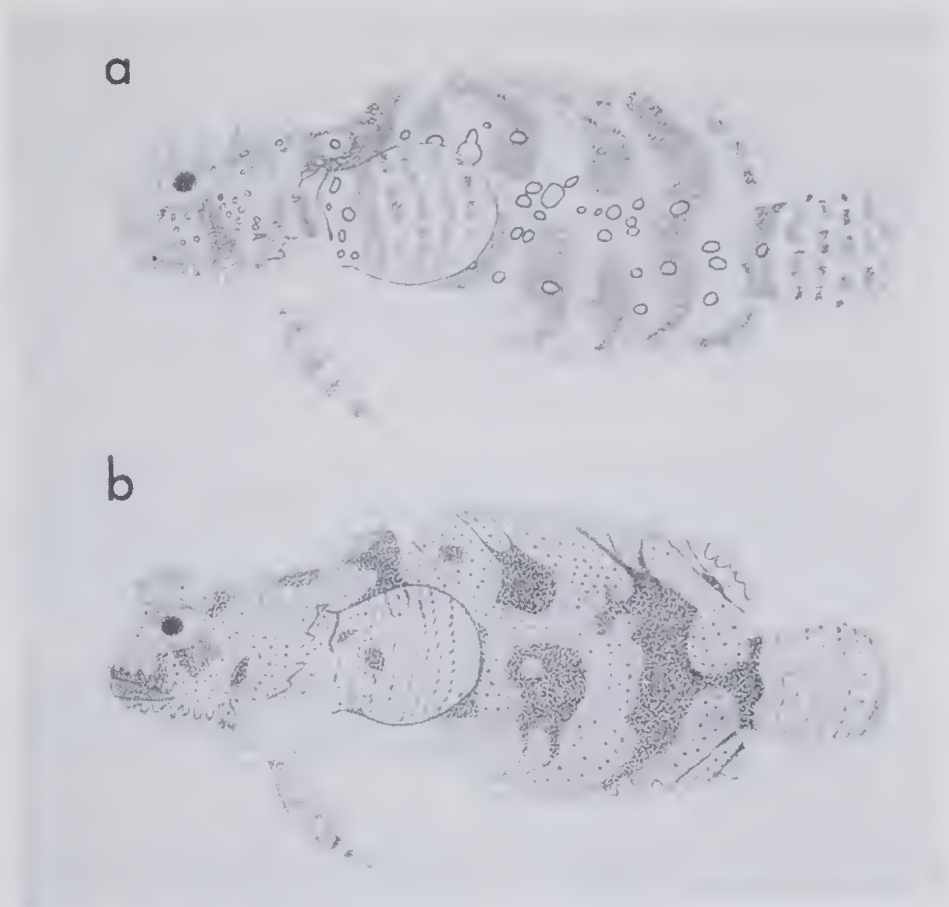


Fig. 3. Colour patterns of *Halophryne*: a, *H. ocellatus*, P16296, 106 mm SL; b, *H. diemensis*, P15289, 138 mm SL.

last 2-3, about equal but shorter than soft dorsal rays; pectoral and caudal rounded, equal in length; ventral fin consists of 1 hidden spine and 2 rays, the first ray much longer and fleshier, equal to pectoral.

Gas bladder of adult male large, about 3 times larger than that of female; no pore in pectoral axilla; vertebrae 10 + 18-19.

#### Colour in 70% ethanol

Sides and head pale brown with dark brown blotches forming 8-9 irregular transverse bars, the first across interorbital and continued below eyes sloping posteriorly across cheek, the last across caudal peduncle; sides and head with scattered white ocelli outlined by prominent dark brown margins, the largest below anterior part of dorsal fin; in large specimens the ocelli may be very numerous, merging to form blotches (see Fig. 1); small specimens may only have a few ocelli; ocelli absent on fins and ventral surface; fins with series of bars, those on dorsal and anal forming continuation of bars on side of body, angled obliquely forward; with increasing size the fin bars become



more numerous and break up into small blotches; the presence of a mucous coating imparts a yellowish brown colour.

#### Comparison with *Halophryne diemensis* (Lesueur) 1824

*H. ocellatus* is easily distinguished from *H. diemensis* by the characters indicated in the diagnosis and certain features of the skull (see Fig. 2). The interorbital region is narrower in *diemensis*, postorbital porcesses of the frontal more posteriorly raked and the postorbital fossae larger and of a different shape; related to the difference in pore sizes is a discrepancy in the size of grooves in the frontals (and in the mandible, supramaxilla and preoperculum); these are relatively wide in *ocellatus*, narrow in *diemensis*. There is also a difference in the premaxillary dentition; teeth of *ocellatus* occur in 2-3 series and those of *diemensis* in 1-2 series. Furthermore, bands of teeth on the vomer and palatines of *ocellatus* tend to be wider and more elliptical in shape.

The 4 prominent tentacles running across occiput, immediately behind orbital region are nearly in a straight line in *ocellatus*, but more rectangular in *diemensis*. The open pores on the head of *diemensis* are small and sometimes difficult to detect. Preserved and live specimens of *diemensis* have many longitudinal ridges of skin on the head which become thicker and usually more reticulated beneath the pectorals.

There are no white ocelli on *diemensis* and the last 2 dark body bars (when present) are always continuous medially rather than separated as in *ocellatus* (see Fig. 3). In addition, the lips of *diemensis* are always much darker.

#### Distribution

*H. ocellatus* is known only from Western Australia, from Fremantle north to Broome. It has been collected in greatest numbers from Shark Bay and only a few have been found north of Exmouth Gulf. The southernmost limit of *H. diemensis* in Western Australia is Shark Bay, its range extending across to southern Queensland and throughout the Indo-Australian Archipelago. *H. ocellatus* appears to prefer deeper waters. It has been trawled and taken by craypot in 20-80 metres, whereas *diemensis* is found intertidal as well as in deeper waters.

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